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ABSTRACT

Fourteen research proposals related to the psychology of second-language learning are described in this report. Each project description includes: (1) background and objectives, (2) procedure, (3) duration, (4) personnel recommendations, and (5) budget estimates. Discussion questions center on the areas of language teaching materials, student learning factors, and problems of teaching and learning in the classroom. A list of conference participants, agenda, discussion, summaries, recommendations, and concluding remarks are furnished. (RL)

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# REPORT OF THE NDEA CONFERENCE

ON

# PSYCHOLOGICAL EXPERIMENTS RELATED TO SECOND LANGUAGE LEARNING

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U. C. L. A.

DECEMBER 1959

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# Report of the

# Conference on Psychological Experiments related to

# Second-Language Learning

Held on the Los Angeles campus of the University of California, December 29th, 1959, through January 1st, 1960, by contract with the Language Development Program of the U. S. Office of Education; Department of Health, Education and Welfare, under provisions of the National Defense Education Act of 1958.

Project Coordinator: Dr. Paul Pimsleur, U.C.L.A.

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The conference which is the subject of this report was held on the U.C.L.A. campus during the Christmas holidays, 1959. Sponsored by the Language Development Program (Title VI) of the National Defense Education Act, its purpose was to elicit expert advice concerning research on the psychology of second-language learning. To this end, a group was assembled which consisted of language teachers, linguists, and psychologists. In the four days of the meeting, many matters of common interest were discussed, and a certain number of research proposals and recommendations were drawn up. It is the purpose of this paper to report on the discussions and to convey the proposals and recommendations of the participants.

## I. The Participants

It was felt that the participants should be selected so as to represent the practical classroom interests of language teachers, the theoretical interests of structural linguists, and the sophistication in research techniques of psychologists. The regular participants, ten in number, included three language teachers (Dr. Prator, Dr. Martin, Mr. Hayes), two linguists (Dr. Sapon, Dr. Stockwell), four psychologists (Dr. Carroll, Dr. Lambert, Dr. Dulany, Dr. Bastian), and the Project Coordinator. The assistance of an additional group of psychologists was made available to the conference on the second day only. These additional consultants included two learning theorists (Dr. MacCorquodale, Dr. Maltzman), a neurophysiologist (Dr. Tschirgi), a clinical psychologist (Dr. Broen), and a psychometrician (Dr. Comrey). A high-school Spanish teacher who had attended an NDEA Institute the previous summer (Mr. Dellaccio) was invited to participate in the last three days of the conference. Dr. Bruce Gaarder, of the Language Development Program, attended the first three days. A complete list of participants, with their academic affiliations, follows.

Regular participants:

Dr. John B. Carroll
Graduate School of Education
Harvard University

Dr. Wallace E. Lambert
Department of Psychology
McGill University

Dr. Don E. Dulany, Jr.
Department of Psychology
University of Illinois

Dr. Jarvis Bastian
Haskins Laboratories

Dr. Stanley M. Sapon
Romance Language Department
Ohio State University

Dr. Robert P. Stockwell
Department of English
University of California, L. A.

Dr. Clifford C. Prator
Department of English
University of California, L. A.

Dr. John Martin
Spanish Department
Fresno State College

Mr. Alfred S. Hayes
(formerly) Department of German
Louisiana State University

Dr. Bruce Gaarder (observer)
Language Development Program

Dr. Paul Pimsleur (Project Coordinator)
Department of French
University of California, L. A.

Additional consultants:

Dr. Kenneth MacCorquodale
Department of Psychology
University of Minnesota

Dr. William Broen
Department of Psychology
University of California, L. A.

Dr. Irving Maltzman
Department of Psychology
University of California, L. A.

Dr. Robert Tschirgi
Department of Anatomy and Physiology
University of California, L. A.

Dr. Andrew L. Comrey
Department of Psychology
University of California, L. A.

Mr. Carl Dellaccio
Lakewood High School

The work of the conference was greatly facilitated by the help of three U.C.L.A. students: Miss Miriam Horowitz, Graduate Student in Psychology; Mr. Winston Hewitt, Graduate Student in French; Miss Jane Orstan, French Linguistics Major.

The Coordinator wishes to take this means of expressing his gratitude to each of the participants and assistants for his or her part in the success of the conference. Thanks to the cooperation of all concerned, the conference sessions were held in an atmosphere that was consistently friendly and productive.

## II. The agenda

Prior to the conference, each participant received by mail a work-paper which contained a resume of current trends in foreign language teaching, a review of previous research, and a list of 27 problems. The list of problems, which served as a point of departure for the discussions, is presented herewith. It is divided into three general areas according to whether the problems focus mainly upon A) the materials of teaching, B) the students, or C) the interaction between the two.

A. Materials:

1. Does the linguistic model used make a difference? The model underlies the kind of material which is prepared.

2. Do kernel sentences have a primary status requiring them to be taught earlier?

3. What is the role of dialogues in language learning? Is it necessary to start by memorizing some material (FSI point of view), or can a frame be abstracted from many examples none of which are memorized (Fries point of view)? How important is the motivating effect of dialogues?

4. Is it true that the world-view of people is revealed in their language? How to use this for teaching the language and/or the culture?

5. Problems of meaning. If the meaning of a word is conceived as the changes in behavior it can bring about, how does this alter the teaching of foreign vocabulary?

6. Susan Ervin mentions need for teaching of situational variations in language, e.g., tu-vous contrast; female vs. male speech in Japanese; levels of formality in speech, etc. Cites idea of Gumperz to use film-strips showing contrastive social situations, and what native speakers would say in them.

B. Students:

7. Aptitude. What are the components of language aptitude, with attention to the audio-lingual skills? Construction of an aptitude test.

8. Transfer. How well does material learned in one modality transfer to another, with particular attention to the problem of aural versus visual learning of language?

9. Re aptitude and transfer questions: what are the relationships among various modalities, auditory, visual, psychomotor (articulation), and how can we use this in teaching?

10. Retention of foreign language utterances. The role of auditory imagery.

11. Personality and emotional factors in language learning. How do these affect normal language learners? problem language learners?

12. Joos (Acoustic Phon., 63, fn) cites the case of an adult who learned a foreign language perfectly in a short time; he saw in this "another manifestation of a chameleon-like adaptability and unassertiveness which also blocked his success as a scholar in a field where he has extraordinary talents." The question arises as to whether personality traits are related to language learning and in what way.

13. How does language learning ability vary with age? Explain this variation and its implications for teaching.

14. Joos suggests that difficulty in second-language learning after puberty has to do with the child's newly awakened sensitivity to group norms, e.g., not wanting to make those "funny sounds." Can we investigate the language classroom as a social group, whose influence may often be inimical to optimum language learning?

15. How can we break down student inhibition against making odd sounds? Can role-playing be used to advantage?

16. How does a child's learning of his mother tongue relate to second language learning?

17. Speaking a foreign language necessarily takes place between at least two people. How does this affect language learning?

18. The problem of bi-lingual minority groups. What are their special problems? How can they be used to help monolinguals learn language?

C. Interaction:

19. What is the optimum proportion of explanation to drill at various ages?

20. Teaching phonology, what is the effect of various techniques: using several voices, using recordings, different speeds of presentation, length of utterance, respelling vs. normal spelling, phonetic training vs. imitation of sounds.

21. Sequence and dosage of the four skills: hearing, speaking, reading, writing.

22. Motivational and learning value of various kinds of material.

23. Effect of various kinds of preliminary instructions upon learning from drills.

24. Does pattern practice "go in one ear and out the other" because the responses do not spring from actual felt needs of the student? How to bring about the need to use a particular structural item?

25. Attitude variables. Attitude toward foreign language learning. Attitude shifts as a result of language learning; as a result of learning about a foreign culture.

26. Language laboratory problems.

27. Organization (grading) of materials according to level of difficulty or order of presentation. Can a more objective system be worked out for organizing materials?

## III. The discussions

Some attempt will be made to summarize important discussions.

3.1 The group discussed at length the matter of grammatical models. This question was felt to be of prime importance, since the way in which grammatical material is organized, presented, and drilled is a direct result of the grammatical model used. All textbooks are built on assumptions concerning the grammar of the foreign language, whether or not the author has made them explicit. Three quite different models now exist, of which the third may be described as the traditional one. 1) Chomsky's model of grammatical structure assumes that a relatively small variety of sentence types occupy a kernel relationship to all others; they are the "basic" sentences derivable by relatively simple rules of the immediate constituent type. Then there are other rules by which these kernel sentences are transformed into more complex sentences. According to this conception of grammar, the sentence "The car was driven by Jack" is derived from the kernel sentence "Jack drove the car." If this model were followed in a literal (and no doubt over-simplified) way, the student would learn kernel sentences and then master rules for combining them to produce more complex sentences. 2) A somewhat different point of view is held by Fries and his followers. They view grammar as consisting of abstract frames or patterns containing slots into which numerous replacements may be put, that is, all sentences are viewed as having the kind of structure that Chomsky attributes only to kernel sentences. A student thus is taught a sentence like "I enjoy books," and then drilled in replacing each of the elements by others: first, the subject, to wit "We enjoy books," "He enjoys books," "My friends enjoy books," etc.; then the verb, to wit "I read books," "I like books," etc.; then the object, to wit "I enjoy movies," "I enjoy games," and so forth. Up to this point, both approaches would exactly coincide, since all these sentences are kernel sentences and would have to be taught in the same way. The difference appears only when the simple sentence is elaborated into a more complex structure. Whereas Chomsky's model would view a sentence like "I enjoy reading books" as a combination of "I enjoy books," plus "I read books," Frie's model would view the sentence as a simple addition of one more slot to the original sentence "I enjoy books." A clear example of the pedagogical consequences of the difference between these grammatical models would appear in the kind of exercise that would be constructed to teach the passive construction in English. The transformational model would give a series of active sentences and ask for the passive transform: "I heard Mary in the hall" becomes "Mary was heard in the hall," and so on. The replacement model would give a single passive sentence and ask for replacement at various points within it. Thus "Mary was heard in the hall" becomes "John was heard in the hall," which becomes "John was called in the hall," and so on. 3) The third model is that which underlies the "fill in the blank" type of drill, in which each sentence is considered relatively independent of the other, with little attention paid to providing the student with a means for arriving at new sentences from those he already knows.

In connection with these grammatical models, a number of pertinent questions arise. Which has the most pedagogic utility, apart from its theoretical advantages? Which succeeds best in enabling the student to spontaneously produce novel utterances in the foreign language? Will it be possible, depending on the model used, to predict the degree of difficulty of various grammatical concepts for native speakers of English? Will every

language require a new model, according to its degree of disparity from English structure? Depending on the model used, how can we refine the idea of the "basicness" of certain utterances so as to present the foreign grammar in as economical a way as possible?

Particular attention is called to Project #4[1], where the problem of determining which grammatical model leads to the most effective pedagogy has been carefully cast in a design for experimentation. This project write-up also includes valuable suggestions as to ways of testing the students' ability to understand and to produce novel utterances in the foreign language.

3.11 In connection with the foregoing discussion, the question arose of the value of dialogues in language teaching. Most teaching materials now employ some sort of dialogues or model sentences, but the effectiveness of this approach has never been tested experimentally.

Experimental evidence is also needed concerning the importance of memorization. Is it necessary to have students commit a minimum number of sentences to memory, or can they learn a syntactic structure per se, without memorizing any particular example? Other questions also arise. Does the motivating effect of dialogues justify their use, quite apart from their utility in teaching structure? How can dialogues be made maximally effective; how can they be given a social context; can pictures be used effectively? Perhaps one criterion of learning is the student's ability to try different ways of expressing his idea, to select another structure if the first one fails to convey his idea; how can this ability be tested validly? It was proposed that the question of memorization versus no memorization be the subject of an experiment. Time did not permit the drafting of a specific proposal.

3.12 While much of the discussion of grammar centered about the linguist's predictions of student difficulties, consideration was also given to the need for observing difficulties as they arise in actual classroom practice. It was agreed that empirical evidence should be gathered concerning the types of errors made by students in phonology, syntax, and vocabulary. Such evidence will take on renewed significance in the light of advances made in linguistic theory in recent years. Project #11 concerns itself with error inventories.

3.2 The question was raised of the role of written material in the first stages of teaching the spoken language. Three possibilities were discussed: 1) no written material at all at the beginning of study; 2) conventional orthography from the start; or 3) phonetic respelling, instead of (or in addition to) conventional orthography. Moreover, whichever of these is adopted, one must consider the effect of introducing the written material at various times in the learning process.

The first possibility, that of withholding written material entirely at the beginning of a language course, faces the problem that students can easily obtain textbooks from the library, at least for the common languages. For experimental purposes, this problem can be circumvented by using an artificial language or a remote language for which no books are readily available. As for the second possibility, that of using conventional

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[1]See Appendix A for project proposals.

orthography, it has the disadvantage of making more difficult the learning of the new sound system by constantly reminding the student of the sounds of his native language. The third method, that of using phonetic respelling, is in use at the Foreign Service Institute. Its advocates point out that it facilitates the teaching of pronunciation, while its opponents mention that it places blocks in the way of learning to read and write, and that in any event it represents a duplication of effort to learn the phonetic spelling system first, and then later learn the conventional system. An experiment, embodied in proposal #1, was designed to test the effect of the introduction of various kinds of written material at various stages in the language course.

3.3 Classroom experiments. Many problems of foreign language learning are in need of experimentation under controlled circumstances, such as those available in the psychological laboratory. The conference, while concentrating on this approach, also gave some attention to the design of an experimental situation in which classroom-type experiments can be performed with some degree of rigor. Once such a setting has been arranged, involving the matching of students, teachers, etc., it is possible to investigate a large number of hypotheses concerning daily classroom procedures within this same setting. It is suggested that such experimental settings be created in several locations, utilizing school personnel of proved dependability, with the constant supervision of an educational research specialist. Among the school personnel mentioned are: Ruth Ginsberg and Hilario Peña (Los Angeles), Edna Babcock (Seattle), Margit MacRea (San Diego), Filomena Teloro (Hackensack), etc. The school person should be supervised and assisted by a linguist to help refine the statements of hypotheses, and by an educational research expert. latter two should be found in the neighborhood of the school system concerned. Possible project supervisors are Pimsleur (UCLA), Brooks (Yale), Hocking (Purdue), Eddy (Georgetown).

Project proposal number 8 covers this topic, as does proposal Xa from last year.

3.4 A certain number of questions were raised which are in the domain of social psychology. These related principally to student attitudes toward foreign languages and their speakers. It is common knowledge that foreign languages are among the least popular high school subjects. The group pressure exerted by this attitude provides a climate which is unhealthy for language learning, and which may prevent potentially good students from doing as well as they should. This is an area which is susceptible of research, but where little has been done. Until the problems have been stated more rigorously no specific research designs can be laid down. It is recommended that this area be turned over to a competent social psychologist, who, with the help of language teachers, will do pilot studies to determine the research needs. Among those suggested are: W. E. Lambert (McGill); W.W. Lambert (Cornell); Klineberg (Columbia); Newcomb (Michigan); Crutchfield (California); Doob (Yale).

Project proposals 2 and 6 relate to this point.

3.5 The area relating to clinical psychology was discussed only briefly. There is some reason to believe, on the basis of teacher observations, that personality variables are sometimes related to a student's performance in learning a language. All language teachers have come across cases of students who are unable to deal with the oral aspects of language because of shyness, fear of making mistakes, or fear of appearing silly to

others. Some students have inexplicable difficulty in learning foreign languages despite every evidence of normal intelligence. Others learn to speak easily, apparently because of a kind of gregariousness or loquacity which leads them to practice speaking more than do their classmates.

The conference did not deal extensively with these issues. It is suggested that this area be given to an interested clinical psychologist with experimental leanings, who will perform the pilot studies needed to determine research needs. Two such psychologists are Broen (UCLA) and McClelland (Harvard).

Project proposal number 9 touches on this area.

3.6 Other discussions, briefly noted.

The process by which a student goes from mere repetition of learned forms to the ability to generate original utterances is of great importance, but is very difficult to investigate. What kind of reinforcements, and how many, are needed to bring about this transfer? What is the optimum spacing of reinforcements? To what extent may changes in scheduling of classes -- shorter but more frequent drill sessions, additional lab time -- be required? An attack on these problems will no doubt involve a large number of related experiments. It was felt this area should be turned over to a research team for investigation.

How can the student be taught not only the words and structures of the foreign language, but also the social contexts which condition linguistic choices (e.g., tu or vous; deference or equality implied by intonation, etc.)? Is the role-playing dialogue (FSI) sufficient, or are training films needed to illustrate the customs of the foreign culture as they relate to linguistic behavior? Are cross-cultural studies a necessary prerequisite to such films? No disposition was made of these issues by the conference, beyond evoking them as subjects for further study.

The conference also touched upon the topic of simultaneous vs. successive learning of two foreign languages. Studies show that, although simultaneous learning progresses somewhat more slowly, this type of learning favors retention. A crucial variable is the similarity between the two foreign languages. This subject is elaborated in project #7.

## IV. Recommendations

Out of the discussions there emerged a certain number of opinions and recommendations. These will be presented in 4.1 to 4.5, below. Taken together with the project proposals presented in Appendix A, they form the body of conclusions of the conference.

### 4.1 Basic Research

At several points in the discussion the question arose of the balance between basic research and research having immediate utility. On the one hand, it was pointed out that research, as practiced by responsible psychologists and linguists, springs from the desire to achieve a deeper understanding of some aspect of behavior, rather than from the urge to prove a point. On the other hand, it was argued that there is an immediate pressing need for experimental evidence concerning the teaching advocated by the NDEA. The group attached some urgency to the need for clarifying the conflict between immediate and long-range goals.

In practice, this conflict turns out to be more apparent than real, for it is clear that both sorts of research are needed: that which enlarges our understanding of the learning process in any of its manifold aspects, and that which gives us evidence upon which to base the daily activities in the classroom. In fact, the one cannot long exist without the other. So-called "basic" research would lose much of its attractiveness if it held no promise of improving some area of human activity, while practical research would soon discover the futility of merely rearranging the elements of our present knowledge without increasing their number.

A sense of the immediacy of the problems confronting language teachers arouses a natural desire for research which will provide answers to these problems, and which will provide them soon. But to expect such answers from linguists and psychologists is to misunderstand their conception of the function of research. Research is not a means for making classroom decisions. It is a means for providing information on which to base such decisions, but it stops with the furnishing of information and leaves the decisions themselves to the teachers.

For example, the classroom teacher wishes to know how much time he should spend on the exposition of a grammatical point and how much on drilling the point. This question is of decided importance, yet the psychologist cannot provide an answer, for the variables are too numerous and too complex. Realizing this to be the case, he will refuse to tackle a question thus broadly stated. Instead, he will provide data concerning such pertinent factors as fatigue, memory, attention, and perception. These data may be of much help to the teacher in arriving at a wise decision concerning the proportion of exposition time to drill time. The psychologist goes no farther than to provide information on a well-defined and precise topic; the teacher then uses this information according to his own lights.

Conference participants were unanimous in urging that a substantial proportion of funds be allotted for basic research, in the firm conviction that this is the surest way to spend money wisely, promoting the healthy growth of foreign language teaching in the United States.

Notwithstanding this deep-felt point of view, every effort was made to arrive at project proposals whose results would be of immediate practical significance. It will be observed that each of the project proposals

presented in Appendix A deals with an aspect of language teaching closely related to classroom problems.

4.2 The use of artificial languages.

A number of proposed projects involve teaching a bit of a foreign language to a group of subjects so as to compare the results achieved under various conditions. Often, such experiments require that the language have certain well-defined characteristics which the experimenter can control and vary at will, and that the subjects have no opportunity to know anything of it other than what they have been taught. To this end, it is often necessary to create an artificial language for experimental purposes, or to reduce a little-known language to controllable dimensions. However, it is sometimes objected that the use of an artificial language for research is inappropriate, in that such a language differs in significant ways from real languages. The following statement was prepared by the conference:

> Since optimum materials for experimentation require that for unambiguous results the experimenter have control over various language elements, such as kind and degree of difference from the first language, i.e., predictable elements of positive and negative transfer in the dimensions of phonology, morphology, syntax, etc., and since extant languages do not permit the experimenter to order and manipulate the dimensions under study, constructed languages, if they meet the rigid criteria specified in Dr. Stanley Sapon's article: "A Work Sample Test for Foreign Language Prognosis" (Journal of Psychology, 1955, 39, 97-104) provide a feasible and satisfactory source of materials for many experimental problems.

4.3 Administration of research projects.

Research projects in the area discussed by the conference are so complex, and require such diverse knowledge, that it may be physically impossible to administer them adequately with present personnel. It is particularly true that they require considerable rigor in experimental design, a field in which special training is essential. Various suggestions were made as to how this problem might be dealt with. The two major ones were:

a. that an Institute or Center be established for the administration of diverse research projects. Such an Institute would best be centered on a University campus where expert help is available in linguistics, psychology, and experimental design.

b. that a person be engaged (if such can be found) solely for the purpose of giving advice and passing on the adequacy of the experimental design in projects supported under Title VI.

4.4 Colloquia

It is suggested that a plan be drawn up whereby colloquia can be held in a large number of communities throughout the country. At these colloquia, teachers would meet periodically with specialists in educational psychology, linguistics, cultural anthropology, and other disciplines. The purpose would be to make the teachers aware of the ways in which knowledge from other fields can improve classroom practice, and to make the scholars aware of the research needs of second-language teachers so as to gradually

produce more research in this field.

4.5 Research collaboration abroad.

W. E. Lambert, consultant from McGill University, made the following suggestion. "Many psychological laboratories in various countries have become interested in research carried out in the U. S. and Canada and have written for further details on studies and on possible replication of North American studies in their own countries. I have a project underway (on national stereotypes held by children) with Otto Klineberg at Columbia and we are carrying it out in twelve different national settings. These colleagues have carried their share of the research out (through correspondence) with outstanding care and skill and have mentioned their continued interest in more such attempts. We could create stable contacts with people abroad who are interested in second-language learning and carry out many of our proposed research projects in several different cultural and linguistic settings. The names of those I think are interested in this topic can be supplied."

## V. Conclusion

The conference was predicated upon the assumption that there exists a range of research interests common to linguists, psychologists, and language teachers. It was further assumed that the opportunity to discuss and clarify these interests would redound to the benefit of the language teaching profession. The participants noted, not without a sense of elation, that the first of these assumptions was confirmed as the conference progressed. The confirmation of the second lies in the extent to which the work produced by the conference is put into action.

Psychologists, linguists, and language teachers have, each in his own way, attacked problems which are of interest to the others. Psychologists have investigated verbal learning and linguistic behavior. Linguists have studied the applications of linguistic analysis to language teaching. Language teachers have developed theories and techniques of pedagogy. However, the tools which each field brings to bear in the form of research methodology differ widely. Psychologists have highly sophisticated techniques for designing experiments, inventing tests, and analyzing data, but are often ill-versed concerning the nature of language and the means for breaking it down into manageable elements for research. Linguists, on the contrary, are strong in language description but less so in experimental design. Language teachers have a wealth of observational data but a paucity of techniques for sorting, classifying, and analyzing them. Each field needs what the others can offer, and thus the stage is set for a fruitful cross-fertilization.

The task undertaken by the conference was a formidable one, particularly in view of the very limited time at its disposal. It undertook to 1) scan the entire range in which linguistics and psychology might benefit the language teacher, and 2) treat a certain number of topics in depth. The accounts herein given of the discussions, the recommendations, and the project proposals enable the reader to judge for himself the degree of success of the conference. No doubt the quality is uneven; not all topics were treated equally well, and some may not have been treated at all. Yet the fact that so large an undertaking could meet with even partial success is a tribute to the seriousness and discipline with which the participants approached their task.

The conference is a first step in an important direction. Language teachers have long recognized that they could profit from the knowledge of linguists and psychologists. A beginning has been made toward making this knowledge available. It should be followed by support for the kinds of projects which emerged from the conference, and by provisions for longer and more frequent meetings of the same sort in the future. Positive action is needed for the continuance of a profitable three-way relationship.

## APPENDIX A: Project Proposals

The following pages contain fourteen project proposals drawn up by the conference.

In addition to these, proposals made as a result of consultations in Washington in the Spring of 1959 should be reviewed. In particular, reconsideration should be given to:

VIA - Basic Parametric Study - Carroll

VID - Effect of Summer Course - Carroll

XA - Inter-relation and sequencing of four skills - Pimsleur

XIIA - Psychological Aspects of XA - Carroll

## APPENDIX B: Personnel

Whenever possible, names of several competent investigators have been attached to project write-ups. However, it is often the case that any of a number of persons could perform a job creditably, as in the case of specialists in experimental design. In the hope that it will be possible to interest many top-flight people in performing research on second-language problems, a list was drawn up of skilled psychological and educational research specialists whose past research has some relevance to this topic: this list is presented in Appendix B.

Notes by Consultants Bastian, Dulany, Hayes, Martin, Sapon, Stockwell.

Project #1: Effect of orthography as a source of negative transfer in the acquisition of second language phonology. (To be undertaken in two interdependent phases, specified below as 1A and 1B.)

Background and objectives for problem 1A: There is considerable anecdotal evidence for the statement that the introduction of orthography induces negative transfer. There is also considerable evidence for the parallel opinion that even phonemic transcription of some variety induces negative transfer.

The objective of experiment 1A is to measure the relative degrees of of negative transfer obtaining for various orthographies introduced at various times.

Procedure for problem 1A: Five independent treatments should be undertaken:

1. students mimicking a specified body of material without any orthographic help whatsoever;

2. students mimicking same body of material using phonemic or respelling transcription from the beginning;

3. students mimicking same body of material, but with phonemic transcription introduced halfway through;

4. students mimicking same body of material using traditional spelling from the beginning;

5. students mimicking same body of material with introduction of traditional spelling halfway through.

Subjects will be selected with initial mimicking ability as a matching variable. If administratively impossible, differences in mimicking ability could be controlled by covariance analysis. All five groups should preferably be taught by the same instructor who will be expected to explain the sounds to the same degree of accuracy, but in the first group he will use only articulatory explanations without symbols. In the second and third groups he will use articulatory explanations with the symbols of his transcriptional system. In the third group he will explain the sounds with the same accuracy, but in terms of orthography. The relative achievement of the five groups on the accurate production of the sounds will be measured in three different ways:

1. by direct testing;

2. by reading aloud from traditional orthography whether they have been exposed to it or not;

3. by elicitation from pictures or other realia.

At the middle of the course, just before the shift to orthography or transcription in groups three and five, a battery of tests identical in form but not in content to those at the end will be given to determine precisely the amount of negative transfer that occurs after the shift, as measurement of the dependent variable.

Background and objectives for problem 1B: The second phase of this experiment, though compromising verisimilitude somewhat, would gain a greater distillation of process variables. Prediction from our knowledge of transfer depends upon the phonemic problem presented to the student as well as upon the method of presentation. There is also the possibility that these two variables might interact.

Procedure for problem 1B: The problem suggests a three-by-three factorial design in which method of presentation would constitute one classification and phonetic problems presented would constitute the second classification. Within the second classification three groups might be distinguished on the basis of the kinds of phonetic segments selected by linguistic analysis. For Group I three to five consonants and three to five vowels would be selected for which no identical letter in the native and target language represents the segment in question. This is a condition for which there is no prediction of positive or negative transfer. For Group II the segments selected would be represented by the same letter in the native and target language, though they would be phonetically different. When the same stimulus requires two different responses, this is the condition for predicting negative transfer. For Group III segments are presented such that both the segment and the corresponding letter are the same in the native and target language. Group III is the condition for predicting positive transfer.

The second classification constitutes three methods of presentation. In the first, no orthography is presented until the final stage at which time subjects are given the minimal training for correctly associating the segment with a letter. Method II presents a phonemic orthography until the final stage at which it is identical with Method I. It seems important that the phonemic transcription used contain no letters of either the target or native orthographies. For Method III the orthography of the target language is presented in the traditional manner.

Three dependent variables are suggested; with separate analysis for each of these variables the design constitutes three statistically-independent experiments. The three dependent variables might alternatively be considered stages within a repeated measurements design. The first dependent variable would be a simple reading test for the experimental materials. The reading test should present the phonetic material in novel combinations. In condition two, subjects would be required to mimic the training material again in novel combinations. In the third variable, "free speech," subjects could be required to recall and produce all those phonetic materials presented earlier. It seems especially important to match the groups on the basis of initial mimicry scores. For all three of these conditions, ratings of the accuracy of production should be obtained from a competent linguist/native speaker.

For purposes of control we would suggest that the experimental materials be comprised of two segment words. For each "word" one phoneme would be the critical one, the other would be a segment from the native language of the speaker.

Duration: For problem 1A, the experiment should be conducted both on a small scale -- for example, ten hours of lab contact -- and in real classes where a situation exists that would allow for this kind of matching and control of instructor; multiple implementation of this project is suggested in order to minimize instructor bias.

For problem 1B, very probably a pilot experiment would be required to determine the most realistic length of training.

Total duration: one academic semester for each of three coordinators on 1A; one summer or 1/4 academic year for two experimenters on 1B and laboratory phase of 1A (as opposed to the real classroom phase).

Personnel: Regarding problem 1A, John Martin in his Fullbright work in Ecuador should be able to carry out this project on English; since this project should also be carried out in French and Spanish, Stanley Sapon is suggested as a possible project coordinator for Spanish, and Ernest Hayden, Andre Malecot or Robert Politzer are suggested for French. Sapon and Dulany are suggested for problem 1B, and Sapon for the lab phase of 1A. Dulany's participation is anticipated as being in the nature of consulting work in the experimental design and assessment of results.

Budget: An estimate of $26,500 for both problems of this experiment. That is, for problem 1A, $13,500 for the salary of the coordinators (three-semesters' total), $1,500 for the laboratory (S.M.S.), and $1,500 for clerical help; for problem 1B, $10,000 for salary of coordinator, consultant, research assistants, and clerical help, as well as materials, preparation and travel.

Notes by Consultants Lambert, Pimsleur

Project #2: Studies to determine ways of increasing prestige value of language learning.

Background and objectives: Motivation is recognized as a key variable in language learning. Often motivation is tied to the learner's attitude toward people who speak a foreign language. Certain attacks on this problem are suggested:

1. construction of a scale to measure attitude toward bi-lingualism.

2. preparation of remedial techniques and materials.

    a. use of prestige figures (movie stars, etc.)
    b. preparation of films, games and other devices.

Background: work has been done by Julian Blackburn (Queens University, London, Ontario) and by Lambert and Gardner at McGill.

Procedure: Left to experimenter.

Duration: One or two years.

Personnel: Lambert, Gardner (McGill). Irving Child (Yale). Doob (Yale). Klineberg (Columbia).

Budget: Pilot study to indicate need for material -- $10,000.

Notes by Consultants Pimsleur, Lambert

Project #3: Compound vs. coordinate language training.

Background and objectives: Teaching techniques differ in their ultimate effect on the development of compound or coordinate language systems (see Nelson Brooks, Language and Language Learning) in the learner. Those students who learn under "new key" methods are more likely to develop coordinate systems, while those taught under grammar-translation techniques will probably develop compound systems. How will the linguistic and psychological behavior of students taught under the two systems differ? By demonstrating the difference in results under the two systems, we may derive criteria for preferring the one or the other.

The literature contains work in this area by DeSaussure, Weinreich, Lambert, and others.

Procedure: Two groups of students are matched on IQ and language aptitude. They are then subjected to a training period during which they learn by two different methods, the first of a compound and the second of a coordinate sort. The features of teaching under the two techniques would vary with respect to the heightening of associated cues or by separating them in time, or using different teachers. After completion of training, they will be measured on a battery of tests for such criteria as confusion with near-synonyms, auditory and reading comprehension, translation speed and accuracy, ability to produce new utterances. Using artificial languages, the training period can be quite short. (Attention might also be given to the differences in performance of the two groups in the area of meaning as shown by the semantic differential.)

Duration: One semester full time.

Personnel: A learning theory psychologist such as Postman (U. Cal.); Maltzman (UCLA); Underwood (Northwestern); Solomon (Harvard); Lambert (McGill). Assisted by a linguist for creation of material and training methods.

Budget: $10,000 to $15,000.

Notes by Consultants Bastian, Dulany, Hayes, Martin, Sapon, Stockwell

Project #4: Comparison of effectiveness of teaching methods implied by three different grammatical models.

Background and objectives: The grammatical model implied by the slot and substitution method of grammatical drill (e.g., English Language Institute at Michigan) is in a basic sense different from that implied by a drill in which a sentence of one form must be converted into a sentence of another form (e.g., statement → question, active → passive, etc.). Both of these differ from the model implied by "fill the blank" exercises. There are textbooks which use one of these types in a relatively "pure" form, others that mix the forms, others that have drills of many types that are not based on any clear grammatical model. Labeling the three clear types (in the order listed above) as (1) the Immediate Constituent (IC) model, (2) the Transformational (T) model, and (3) the Finite-State (FS) model, we can try to determine which model serves as the basis for the most efficient pedagogy.

Procedures: Three grammars, IC, T, and FS, would be constructed to match a single corpus of grammatical sentences in such a way that each grammar properly characterized that corpus, whithin the limits of each model's capabilities. This is an exceedingly difficult assignment; we are by no means sure that it can be done (IC rules are inherently more powerful than FS rules, and T rules in turn are inherently more powerful than IC rules). But if such a corpus and threee matching grammars can be constructed -- and we believe that the question is of sufficient interest both psychologically and linguistically, that it ought to be tried -- then a well-controlled experiment can be performed which shows promise of disclosing important clues about the process by which the huge inductive leap is made by every successful language learner from finite linguistic experience to unlimited capacity to produce novel sentences.

Given the corpus and three matching grammars, one set of subjects would be taught a substantial fragment of the corpus (the same fragment in each group) in terms of IC, a second in terms of T, and a third in terms of FS. The three groups of subjects would be initially matched in aptitude scores. In all three groups, drills and explanations would be framed in terms only of the particular grammatical model to which they were being exposed: the model would be treated as if it were the one perfect and unique model of that language's structure.

It is recommended that the teaching be of such a nature that it will permit accurate records of time spent in reading criterion, and accurate records of all aspects of student behavior during exposure, etc. (e.g., automated learning with students instructed individually).

At this point the experiment could break into two different parts, in order to get a piece of information -- quite different from the final objective -- as an intermediate by-product.

(1) At some midway point, when the three groups have had identical classroom exposure, they could be tested for their proficiency in the language. Comparative results might indicate whether one model or the other produces better immediate control.

(2) At some end point, when the instructor was satisfied that each group thoroughly understood the language in terms of that particular model, a testing of all three groups would be carried out as follows:

1. Receptivity
   (a) Given sentences from the corpus which were not contained in the fragment studies, and word sequence that did not match the rules. The subjects must determine which of these were grammatical sentences, and which were not.
   (b) Given sentences from the corpus -- novel in the experience of the subjects -- the subjects are asked to translate them: i.e., to understand novel sentences constructed from familiar rules and lexicon.
2. Productivity
   (a) Given an appropriate stimulus (an English sentence, a picture, . . .), the subject is asked to make an appropriate response in the language (the appropriate response, of course, will be a possible sentence to which he has not been explicitly exposed).
   (b) Given a fragment of a novel sentence, the informant is asked to complete it in any grammatical fashion.
   (c) Given a sequence of words and phrases which are not a sentence, the subject is asked to rearrange the elements to produce a sentence.

Duration:

1. Corpus and Grammars: 9 months, two linguists half time, plus linguist consultants, and one psychologist as consultant.

2. Teaching materials: 4 months, six half-time graduate assistants.

3. Teaching: 1 month, three full-time (summer) teaching assistants, plus one full-time psychologist for summer.

4. Testing subsumed under 3.

5. Analysis: linguist as consultant to psychologist.

Personnel: For construction of material, one-half time of two linguists (Chomsky, Halle, Sapon, Stockwell, Schachter) each with a graduate research assistant, or full-time of one linguist (damn near impossible to buy) and research assistants. For experimental design and control, one psychologist full-time one summer and occasional consultation during the preparatory year (Dulany, Brown, Bastian, etc.). For conducting the classes, a highly skillful language teacher selected out of institutes; finally subjects.

Budget:

| | |
|---|---|
| Linguists, one academic year | $15,000 |
| Psychologists, summer and consultation | 5,000 |
| Three teaching assistants, one summer (each $750) | 2,350 |
| Subjects (60 for one month, 2 hrs/day, = 40 hours) | 1,500 |
| Research assistance | 6,000 |
| Clerical | 4,500 |
| Travel | 2,500 |
| Linguist consultant in summer | 1,000 |
| Materials | 700 |
| | $38,650 |

Notes by Consultants Lambert, Pimsleur

Project #5: Effect of context on satiation in vocabulary drill.

Background and objectives: It has been shown in previous studies (Lambert, J. Exp. Psych., in press) that the connotative meaning of a word is depleted by many repetitions of it. (If you say book, book, book over and over, the word soon loses part or all of its meaning.) The extent of this effect has been shown to have a high negative correlation with the ability to learn paired associates. The present experiment wishes to discover whether we can reduce this satiation effect by embedding the foreign word in a context.

Procedure: Three groups will be trained: group A with traditional paired associates vocabulary drill; group B with the same words embedded in a signle context sentence to be repeated a given number of times; group C with the same words embedded in several different context sentences. One would predict the superiority of B and C over A. Moreover, if C is found superior to B, we will be able to make some statement about the appropriateness of stressing concept formation in the learning of vocabulary.

Duration: One semester.

Personnel: Jakobovits (McGill); Osgood (Illinois); Dulany (Illinois); Maltzman (UCLA); Postman (Cal.); Underwood (Northwestern).

Budget: $10,000.

Notes by Consultants Lambert, Pimsleur

Project #6: Social Attitudes related to foreign language learning.

Background and objectives: One may conjecture that students' social attitudes toward the cultural group whose language they are learning will affect their success in learning it. Recent studies (Lambert, et al., J. Abnormal and Soc. Psych., in press) Gardner and Lambert, Can. J. of Psych., 1959) have indicated clearly how important this attitudinal variable is, and have provided techniques for the measurement of students' stereotypes about the other cultural group. It seems advisable to measure the association between stereotype attitudes and skill in language learning, so that some means of counteracting negative attitudes may be developed.

Procedure: Sample groups will be selected in one or more sensitive areas; e.g., Spanish in New York City, German in Pennsylvania, Spanish in Texas or California. Students belonging to the dominant culture will be tested by questionnaire and other methods regarding their attitudes toward members of the minority culture, and the results correlated with their performance in learning the language of the minority culture. Attention will be given to reverse situations (such as Puerto Ricans who are learning English) where favorable attitudes may exist toward the dominant group. It is understood that the importance of this study lies in attempting to account for performance in language learning above and beyond that which may be predicted on the basis of the students' ability.

Duration: One semester

Personnel: Lambert and Gardner (McGill); W. W. Lambert (Cornell); Klineberg (Columbia); Newcomb (Michigan); Crutchfield (Cal.).

Budget: ???

Notes by Consultant Carroll

Project #7: Successive vs. Simultaneous Learning of Two Foreign Languages

Background and objectives: High-school teachers, and more especially high-school guidance counselors, are almost unanimously of the opinion that students should not attempt to learn two languages simultaneously, or at least that one language should be well begun before another is started. Under these conditions students frequently are discouraged from ever starting a second language. Research evidence is needed to determine whether simultaneous learning of two languages is actually less effective than successive learning of the languages. There is already some experimental evidence (though very limited) to suggest that simultaneous learning of languages is slower and more difficult than successive learning, but that it results in better retention in the long run.

Procedure: The basic design involves two groups, each group having the same number of contact hours with each of two languages. However, group 1 (successive learning group) spends the first half of these hours on language A, and the latter half on language B. Group 2 (simultaneous learning group) learns two languages in parallel courses throughout the total time allotted for learning. The progress of each group is measured at suitable points during the learning and also at several points after instruction is terminated, to measure retention. Further, it would be important to investigate the effect of the amount of similarity between the languages, in various aspects, e.g., phonology, morphology, lexical content covered. (The theory of learning suggests that the greater the difference, the less the interference.)

Initially, the experiment would be conducted on a small scale in a psychological laboratory setting, possibly with semi-automated presentation devices and with specially constructed language materials in order to permit adequate control of the relevant linguistic factors. But classroom experimentation could also be attempted utilizing real language materials. It goes without saying that the groups would learn to be matched or controlled for linguistic aptitude. Classroom experiments would involve both elementary and secondary school pupils.

Duration: Planning and design - 6 months; psychological experimentation - 3 months; classroom experimentation - 9 months; analysis and write-up - 6 months: total -- 24 months.

Personnel: To be conducted by a team headed by a linguist-language teacher and a psychologist or educational measurement specialist at a university, plus necessary research assistants. Lambert, (McGill), Street (Michigan State), Goss (Mass.), Corin (Cal.), try women's colleges in Northeast.

Budget:

| | |
|---|---|
| Linguist-language teacher 1/3 time, 2 years (incl. summer) | $ 8,000 |
| Psychologist 1/3 time, 2 years (incl. full time summer) | 8,000 |
| Research assistants 2 - 1/2 time, 2 years | 8,000 |
| Nonpersonnel costs | 5,000 |
| | $29,000 |

Notes by Consultant Prator (elaborating an earlier write-up by Pimsleur)

Project #8: Problems involved in drill materials

Background and objectives: The very heart of the language-learning process is the carrying out of drills of various types, and there are a large number of different drill techniques. Current preferences for certain techniques over others are based largely on intuition and theoretical considerations, yet can be tested experimentally with relative ease.

It is desirable to establish an experimental framework within which numerous hypotheses regarding the effectiveness of various types of drills can be tested. A very long list of such hypotheses could and should be constructed; the conference participants felt that the following were particularly obvious and significant:

1. That a given amount of time spent in choral drill is more productive than the same amount spent in individual drill.

2. That, when the making of a distinction is to be drilled, it is preferable to drill each alternative separately before drill on the making of the distinction.

3. That the effectiveness of a drill varies directly with the number of repetitions of each item.

4. That drills conducted at uniformly normal conversational speed are more effective than those done at a rate much slower than normal or those done at variable rates.

5. That drill on a given structure is more effective if conducted within a real situation which calls for the use of the structure (a blindfolded child trying to answer the question "What's this?") than when carried out without the prior creation of such a situation.

6. That drills which involve the use of entire sentences are more effective in imparting control of grammatical structure than are blank-filling drills requiring only that a single word or phrase be supplied.

7. That drills which can be conducted without reference to a printed text are more effective in teaching grammatical structure than are those which must be conducted from a text.

8. That a brief analytical explanation of a structure, given either prior to or after drill on that structure, increases the degree of mastery achieved (three arrangements to be tested: prior explanation, subsequent explanation, no explanation).

Procedure: It is believed that this type of experiment could be conducted in actual foreign language classes. Ten of these might be selected. According to the requirements of each experiment, these twenty classes can be divided into two or three sub-groups, with all sub-groups within a given class working under the same teacher and classroom conditions in order to secure maximum control of variables. A given experiment would be tried out in a number of different classes; the alternative drill techniques would be used with the sub-group within each class. Results would be tested and evaluated. An entire series of experiments can thus be carried out involving the same groups.

Duration: Individual experiments might be terminated in as little as a few weeks, but it would probably be economical to plan for a two-year series.

Personnel: Pimsleur with L. A. school personnel. This would be a good project for a F. L. supervisor, with help from an educational research specialist. For example, Edna Babcock, Margit MacRea, F. Telora, etc.

Budget: Per year

| | |
|---|---|
| Linguist-coordinator, 1/4 time | $ 2,500 |
| 10 classroom teachers at $100 per month for 10 months | 10,000 |
| Research associate, full time | 4,000 |
| Secretarial and clerical assistance | 2,000 |
| Five tape recorders at $250 | 1,250 |
| Tapes | 400 |
| Miscellaneous | 2,500 |
| | 22,650 |
| University overhead, 15% | 4,600 |
| | $27,250 |
| Two-year Total | $54,500 |

Notes by Consultants Pimsleur, Lambert

Project #9: A study of Under-Achievement in Language Learning

Background and objectives: Every language teacher has observed that a certain number of students display marked inability to learn foreign languages, despite apparently high intelligence, motivation and effort. These are the under-achievers. Casual observation indicates their number may be quite large, perhaps 10% of the average high-school class. They are so baffling, such a burden to themselves and their teachers, that their case is particularly deserving of inquiry. Yet no techniques now exist for systematically diagnosing and counseling such students. It is the aim of this study to develop such techniques.

Procedure: Existing measures of ability to learn foreign languages are adequate for normal students. However they are not sufficiently sensitive for use in diagnosing the source of difficulty in deviant cases. The attempt here will be to include as many potentially relevant variables as possible, since there is no theoretical justification for an a priori decision as to where the difficulty may lie.

A group of under-achievers will be chosen, i.e., students decidedly poorer in language courses than in their other courses. They will be contrasted with a control group who are their scholastic equals, but do not do badly in languages. The following types of information will be obtained for all subjects:

1. differential measures of their performance in various phases of language learning.

2. language aptitude.

3. social attitudinal variables; e.g., stereotypes, prejudice.

4. physiological measures; e.g., visual and auditory acuity.

5. case history variables; e.g., bi-lingualism, age, sex.

6. psychological variables; e.g., need achievement, anxiety, rigidity.

On the basis of these measures, plus personal interviews, a clinical description of the subjects will be made, with an attempt to classify them in diagnostic categories, to describe the nature of each problem, and suggest [illegible]edial treatment.

Duration: Two years.

Personnel: Pimsleur (UCLA). Consultants in the various disciplines, such as Lambert (McGill) for social psychology, Malmo (McGill) or Tschirgi (UCLA) for neurophysiology, McClelland (Harvard) for clinical psychology.

Budget: $30,000 for two years

Notes by Consultants Bastian, Hayes, Martin, Sapon, Stockwell

Project #10: The investigation of the hierarchy of factors contributing to the intelligibility and effect.

Background and objectives: Experienced language teachers can specify with near-perfect accord the speech sounds of a foreign language that are difficult for American students to master, and linguists can even suggest a hierarchy of difficulty. What is not yet known is the result, in terms of communication with, and effect on the native listener, of varying degrees of success in the productions of these difficult sounds. We do not know, in essence, which are the critical elements of a speaker's pronunciation that lead a native listener to judge that pronunciation as excellent, good, etc., ranging down to inability to understand an utterance that might be correct on other linguistic dimensions. Similarly, foreign language teachers are inclined to make judgments about the relative importance of certain structural features, when all that is really known is that these are features difficult for students to learn.

There are a number of impelling reasons why knowledge of truly critical features is valuable:

1. Since it is impossible to acquire perfect control over many difficult features in limited training time, it would be profitable to put special emphasis in the classroom on those features known to be maximally important in communication.

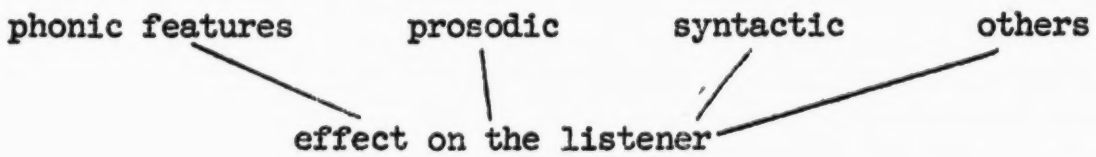
2. There is a pressing need to evaluate trainees in realistic terms, with a justified weighting of their abilities, ralating these abilities to accuracy of communication and effect on the native listener.

3. The effect upon the native listener of the characteristics in American speech has very real psychological import and might well serve as one of the bases for selecting candidates for overseas work.

4. It would be of interest to all concerned -- psychologists, linguists, language teachers, anthropologists, sociologists, etc. -- if the data and results to be outlined below would permit us to make statements about certain fundamental factors of linguistic communication. It is assumed for example that different signals in a language carry different quantitatively-communicative yields, but very little systematic knowledge of the difference between the burdens carried by different signals now exists.

Procedure: At the beginning and the end of the summer of 1960, some 2,500 foreign language teachers will take a set of tests of speaking ability. The yield of these tests will be about 5,000 recordings of American teachers of Spanish, French, Italian, Russian, and German, demonstrating a full spectrum of abilities. The proposed research will use as raw data, the information contained in the scores of these tests.

The scores contain, for example, information as to the success or failure on the difficult speech sounds, grammatical features, the level of fluency, etc. The procedure will involve statistical analysis leading to such information as the correlation between specific features (and interactions between them) and judgments of the speaker's communicative success. A second step is planned in which selected groups of native speakers will make judgments on parallel lines of the recordings. These judgments will also be submitted to similar appropriate analyses. Schematically, the yield of this research can be shown:




It has been suggested, and is acceptable to the ETS, Princeton, to carry out the statistical work necessary.

Duration: 18 months

Personnel: Dr. Wm Coffman, ETS and staff, Stanley Sapon. Two graduate assistants.

Sapon will act as consultant to ETS on the linguistic problems to be considered in the design of the research and will direct the assistants in the supplemental gathering of native reactions to the speakers. The organizing and processing of the data will be done by ETS.

| Budget: | ETS | ? |
|---|---|---|
| | 2 Graduate Assistants | $4,000 |
| | Consulting, panel fees | 2,000 |
| | Travel | 1,500 |
| | | $7,500 |

Notes by Consultants Prator, Carroll, Dellaccio

Project #11: Error inventories at various stages in learning French, Spanish, German, Italian, and Russian.

Background and objectives: In recent years, efforts to determine the difficulties which a native speaker of English will have in learning a foreign language have shifted from a pragmatic to a theoretical approach. In other words, instead of identifying and tabulating the errors actually made by students in speaking and writing, researchers have attempted to predict these errors by means of contrastive analysis of the phonological, grammatical, and lexical structures of the two languages in contact. The theoretical approach has definite advantages, chiefly those of providing depth of insight and systematic knowledge of the difficulties involved in language learning. However, this approach also has serious limitations: though remarkably effective in predicting errors in pronunciation, it has achieved only limited success in predicting grammatical and lexical errors; our knowledge of the structures of all languages - even English - is quite fragmentary; contrastive analysis will not predict errors due to unwarranted extensions within a foreign language of pattern which do occur legitimately elsewhere within that same language.

It has also been found that contrastive analysis can go much further and achieve more accurate results if it goes hand in hand with error counting. Errors which are noted suggest extensions of analysis; and the analysis, in turn, suggests the possibility of certain types of errors, which are later found in fact to occur.

It would appear highly desirable, then, for the government to encourage renewed research activity in frequency counts of errors. Little such research has been done in the last fifteen years, a period during which linguistic theory has made such giant strides ahead as would permit much more accurate and illuminating counting of errors. Frequency counts of errors in each of the five languages would be an extremely valuable complement of the five contrastive analyses already undertaken under government suspices.

This project envisages the preparation of reasonably exhaustive frequency counts of the errors in pronunciation, grammatical structure, and choice of lexical items made by beginning, intermediate, and advanced English-speaking students of the five languages mentioned in the project title. If possible, the counts would also differentiate between errors which occur in writing and those characteristic of speech as well as attempting to ascribe errors to various types of causes: interference of the native language, unwarranted extension of patterns within the foreign language, other causes.

Procedure: A very extensive corpus, specially prepared with the purposes of this research in mind and including both written and recorded spoken materials would first be gathered. The advice of a psychologist will be needed in accumulating the corpus. The written corpus should include as large a variety of material as possible, particularly expository and narrative compositions, letters, prepared by students as special assignments. It would be well to avoid writing based rather directly on a model written by a native speaker of the foreign language. One excellent source for the recorded spoken corpus would be the achievement tests of ability to speak French, Spanish, etc., taken by the language teachers attending the NDEA summer institutes.

Much of the work of detecting and compiling errors could be done by native speakers of the five languages with little specialized training. An expert linguist would be required, however, to elaborate the system of classification of items. Access to IBM tabulating machines to handle the great number of items involved appears essential.

Duration: At least two years.

Personnel: Over-all administrative coordinator, full-time (ACLS or Center for Applied Linguistics); linguist-director for each of five languages, one-third time, the five to constitute the projects' Advisory Board (these linguists could be connected with different universities); clerical and secretarial help.

Budget: Per year

| | |
|---|---|
| Coordinator | $10,000 |
| Five linguists, one-third time | 18,000 |
| Clerical and secretarial | 40,000 |
| Publication by photo-offset | 50,000 |
| Other costs (20% of above) | 23,600 |
| One-year total: | $141,600 |
| Two-year total: | $283,200 |

Notes by Consultants Carroll, Prator, Dellaccio

Project #12: Parameters of the Learning Process.

The conference wishes to include in its recommendations Study VIa of the previous series of proposals (Carroll, 5/24/59), and reference is therefore made to that proposal, which called for a descriptive and statistical study of the course of language learning in a representative sample of language classes throughout the country and at various age levels so as to answer this kind of question: Given an individual with a specified age and with a specified degree of aptitude for learning, how long is necessary (e.g., how many contact hours, etc.) to bring him to a specified degree of competence in a foreign language as measured by suitable standardized tests?

Reference is also made to the following related proposals, all of which are recommended as collative studies:

VIb: Relations among the four skills (are there differential rates for learning the four skills?).

VIc: Retention and relearning study (how long are foreign language skills and knowledge retained and how rapidly can they be relearned after disuse?).

VId: Effect of a summer course (is learning more efficient in an intensive summer course than in the usual two-term academic course, when contact hours are equated?) [It is to be understood that the results of this study could be generalized only to those situations where the learner is learning a foreign language in a native language environment. They could not be generalized, for example, to the case of foreigners learning English in an American university, where experience shows that year-long courses are more effective than summer courses.]

Notes by Consultants Hayes, Dulany

Project #13: To test the effectiveness of three methods of using listening and/or recording devices in the laboratory.

Project: The three methods referred to in the project title are:

1. The student listens to appropriate foreign language material through headphones, repeating after the speaker in the spaces provided.

2. The student listens as above but, in addition, a microphone is used for simultaneous feedback of his repetition.

3. The student listens to a master sample on Channel I of a two-channel system and is provided with instantaneous play-back of his own imitation as recorded on Channel II.

Of particular interest in the evaluation of these procedures is the claim that the opportunity for the student to re-hear his own imitation of the master sample in method 3 above enhances the student's matching of his response with the master sample.

The manner in which these three methods of training are evaluated seems especially important. These three procedures lend themselves especially well to the discrimination training procedures and psychophysical measurement procedures of the psychological laboratory. The measurement of pronunciation mastery does present the additional difficult of obtaining ratings of excellence of pronunciation. The learning phase of teaching pronunciation, however, seems most manageable with procedures that permit strict control of number and conditions of experimental trials. It is difficult to see how the requisite control for a comparativ evaluation for these procedures can be obtained under classroom circumstances. Since the evaluation in these procedures within will-controlled laboratory procedures in this case represents virtually no compromise in verisimilitude or realism, it is strongly recommended that they be evaluated under laboratory conditions.

Phase I of this project would then conduct an experimental evaluation along these lines. Phase II should explore supplemental experimental projects designed to augment the utility of those of the three methods under test which prove to have positive value, i.e., phonetic preconditioning and training in discrimination.

The time at the disposal of the conference was not sufficient to specify this project in greater detail.

Notes by Consultant Carroll

Project #14: The sequencing of training in reading, listening and speaking.

Problem: Objections to the audio-lingual approach stem, in part, from the fear that students will not be able to read and write as well as if they had been trained by the traditional grammar-reading approach. Advocates of the audio-lingual approach maintain, however, that the opposite is in fact the case: that students trained for a year audio-lingually will, in their second year, catch up to and surpass in reading skill, students trained in the conventional manner.

If the latter opinion should be confirmed, a psychological paradox would present itself: that training on a related task transfers to the learning of a task more than previous training on the task itself! Severa hypotheses could be offered for accounting for this paradox, e.g., that training in reading without prior audio-lingual training is essentially different in kind and has a much slower learning curve.

The problem of this study is to try to explore the psychological factors in the FL reading process when conducted with or without prior audio-lingual training. The study would be conducted initially in the psychological laboratory with small scale foreign-language tasks in order to provide better experimental control and to obtain results faster than would be possible in a classroom learning experiment.

Later, however, a classroom learning experiment should be set up to parallel the design of the psychological laboratory experiment.

Procedure: The basic experimental design, in its simplest form, would be as follows:

| Groups: | 1st 10 sessions of training | 2nd 10 sessions of trainin |
|---|---|---|
| Experimental I | Audio-lingual → Test | Reading → Test |
| Experimental II | Audio-lingual plus reading → Test | Reading → Test |
| Control | Reading only → Test | Reading → Test |

There would be tests of all four skills (regardless of how appropriate any test might be for a given group); analysis of variance would be used to compare the gains for the several groups in each skill. Tests will not only include the best types currently approved for measuring achievement but also a comprehensive testing of some of the psycholinguistic properties of the behavior involved, e.g., tachistoscopic reading tests, word association tests, latency-of-naming tests, etc., in order to try to determine whether an individual is "thinking in the language" or "translating" when he reads.

The design could be further complicated after initial experiments are made, chiefly by allowing more variations in the kind of training offered in the 2nd 10 sessions, including audio-lingual training in various amounts. Subjects would be volunteer or paid college students,

or possibly high school students if such are available. Groups will be matched on, or controlled by, language aptitude, previous language experience, and other relevant factors.

Duration: One year.

Suggested Budget: $15,000

## APPENDIX B: Personnel

J. O. Cook
(North Carolina Women's College)

S. Ervin (Berkeley)

Howard Maclay (Illinois)

Darrell Bock (North Carolina)

Donald Walker (Rice Institute)

Felix Kopstein

George Miller (Harvard)

Irving Lorgo (T. C., Columbia)

Osgood (Illinois)

Cofer (NYU)

Lumsdaine (Amer. Inst. Research, Pittsburgh)

Jenkins (Minnesota)

Roger Brown (MIT)

Davis Howes (MIT)

J. R. Wittenborn (Rutgers)

W. B. Webb (Florida)

Murray Aborn

Sol Rushel

Irv Saltzman (Indiana)

Charles Godcharles (Hamilton College)

A. Staats (Arizona University)

John Flovell (Rochester)

Leo Postman (Berkeley)

B. J. Underwood (Northwestern)

Bousfield (University of Connecticut)

John Swets (MIT)

Bob Isaacson (Michigan)

Bob Gardner

Jakobowits (McGill)

Alain Paivio (Cornell)

M. Mivon (Illinois)

J. W. Wrightstone, J. Justman - (NYC Brd. of Ed.)

Dunkel (Chicago)

Warren Findley (Atlanta)

John Caffrey (Palo Alto, Cal. School System)

David Ryans (Texas)

Evan Keislar (UCLA)

(The purpose of this list is to make available the names of skilled research workers, mainly psychologists, who might be interested in assisting with research in the foreign language field.)